1 ABSTRACT OF THE DISCLOSURE

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3 A network switch includes at least one port processor and at

4 least one switch element. The port processor has an SONET OC-x

5 interface (for TDM traffic), a UTOPIA interface (for ATM and

6 packet traffic), and an interface to the switch element. In one

7 embodiment, the port processor has a total I/O bandwidth

8 equivalent to an OC-48, and the switch element has 12x12 ports for

9 a total bandwidth of 30 Gbps. A typical switch includes multiple

10 port processors and switch elements. A data frame of 9 rows by

11 1700 slots is used to transport ATM, TDM, and Packet data from a

12 port processor through one or more switch elements to the same or

13 another port processor. Each frame is transmitted in 125

14 microseconds; each row in 13.89 microseconds. Each slot includes

15 a 4-bit tag plus a 4-byte payload. The slot bandwidth is 2.592

16 Mbps which is large enough to carry an E-1 signal with overhead.

17 The 4-bit tag is a cross connect pointer which is setup when a TDM

18 connection is provisioned. The last twenty slots of the frame are

19 reserved for link overhead. Thus, the frame is capable of

20 carrying the equivalent of 1,680 E-1 TDM signals. For ATM and

21 packet data, a PDU (protocol data unit) of 16 slots is defined for

22 a 64-byte payload. The PDUs are self-routed through the switch

23 with a 28-bit routing tag which allows routing through seven

24 switch stages using 4-bits per stage. Bandwidth is arbitrated

25 among ATM and Packet connections while maintaining TDM timing.